Geotechnical behaviour of saline sabkha soils

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Abstract: The behaviour of salt-cemented sabkha soil was investigated by considering the effect of brine and distilled water on its properties. Laboratory and field testing programmes were conducted. Results indicate that the percolation of distilled water through the sabkha causes destruction of the natural cementation, leading to collapse, increase in permeability, reduction in strength and increase in settlement. Dissolution and leaching of halite, gypsiferous and calcarenite cements occur, leaving the quartz particles covered by a thin loose mat of illitic clay with large voids. The collapse deformation of sabkha is linked to the ambient salt complex. The soaking of sabkha produces practically negligible collapse; leaching causes a significant collapse due to the softening, dissolution and effusion of salts from the soil skeleton.